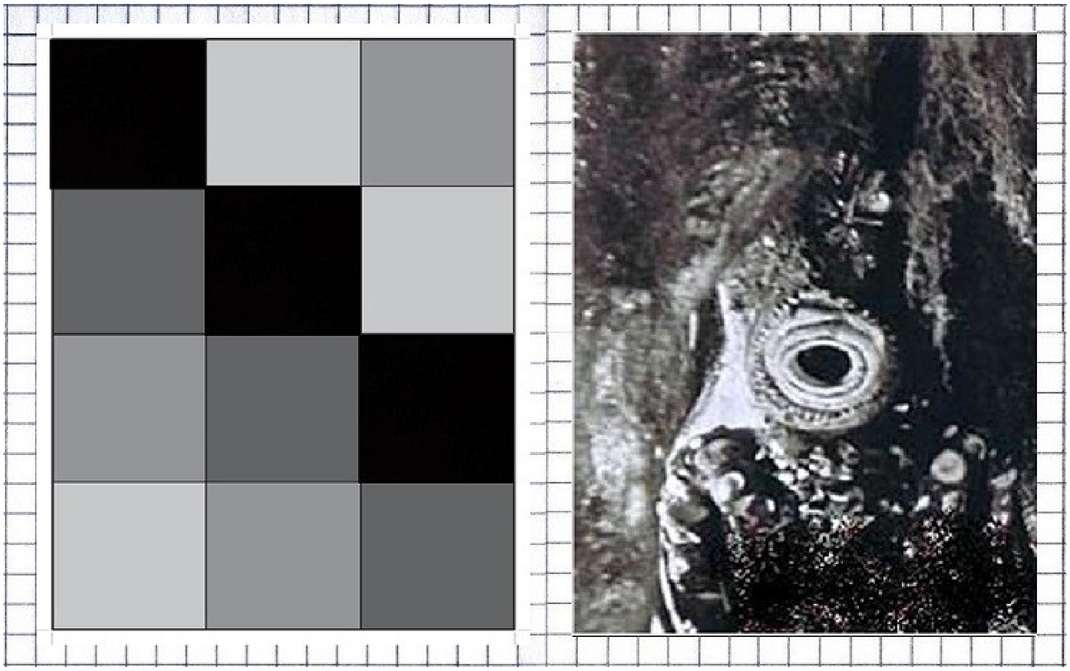
Alien Life as an Observer



How Extraterrestrial Life Forms Might Perceive the World

Understanding how life on Earth observes the world could help us imagine how some extraterrestrial, even non-DNA based life, might perceive its environment.

An algorithm for visually representing RNA / DNA sequences, I came up with many years ago, is based on five discrete values of the gray scale where U=black, C=dark, A=gray, G=light, T=white and 3x4 matrix as a structure of 12 positions.

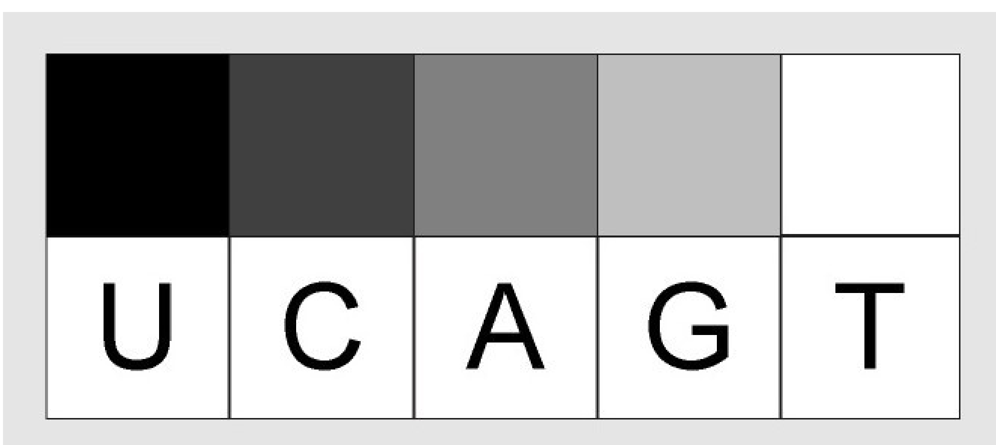


Fig.1 Conversion of RNA/DNA bases into five discrete values on the gray-scale

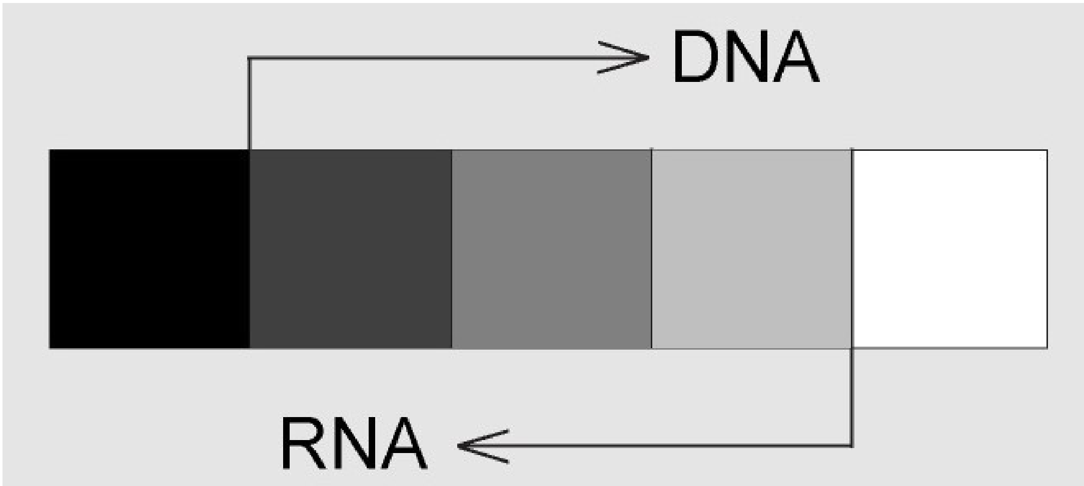


Fig.2 RNA and DNA bases as two subsets of the gray-scale

Thus, it has become possible that any linear RNA / DNA sequence can be represented as a series of two-dimensional image with specific (visual) properties. It could be easily noticed that this kind of RNA / DNA representation in the form of a 2D image uncovers many features of a sequence that remain unnoticed in the standard linear alphabet representation.

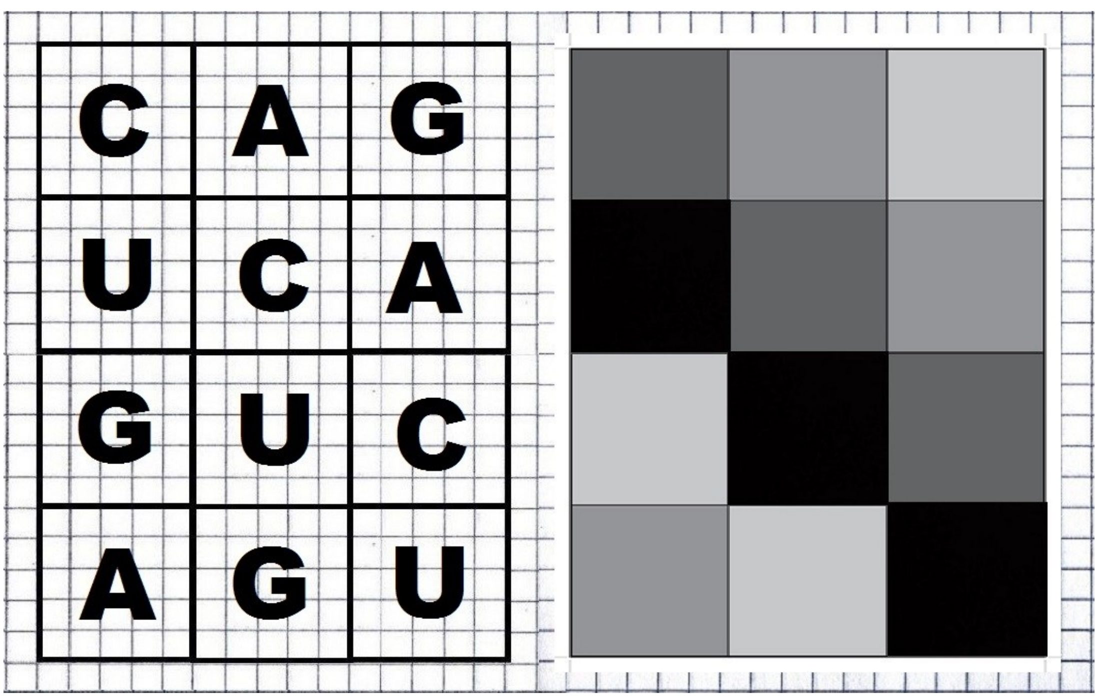


Fig.3 Conversion of RNA sequence CAGUCAGUCAGU into 2D image

Over time, it became clear to me that this algorithm was not an invention but in fact a discovery. In other words, this visual representation of RNA / DNA actually reveals that, besides its biological functionality, there are some additional information encoded in the DNA that are more at the level of meaning than function. It occurred to me that this way generated images might in fact represent some rudimentary "images of the world" recorded by the first living organisms which have been preserved within DNA sequences of all life forms on Earth.

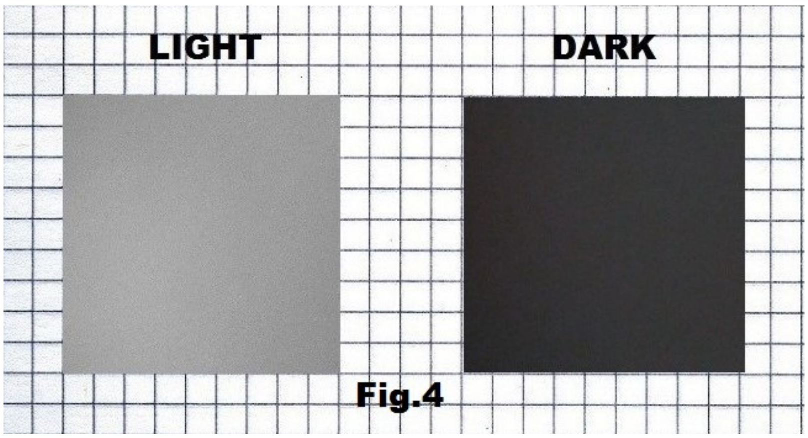


Fig.4 The earliest “pictures of the world” recorded by the first life.

These representations, of course, cannot be seen by directly observing a DNA sequence in its biological form, the way while looking at the neurons of the vision center we cannot see what we are now seeing in front of us. In these two cases, in addition to their biological functions, both a DNA sequence and a neuron contain additional information that can be decoded in one way or another into forms we call "images." Since the first information recorded by the earliest living molecules (proto-RNA) that was existentially important for their survival was probably binary in its structure (cold-hot, dark-light), I often tried to find such sequences and translated them into images. I think that's what the first "images of the world", recorded by the earliest living forms on Earth, looked like. And it is very possible that such or similar "images of the world" will be encoded within some extraterrestrial non-biological life forms with very different morphology and metabolism.

Interestingly, the binary sequence, which consists only of bases C and G, (dark light) can define both, the RNA and DNA sequences.

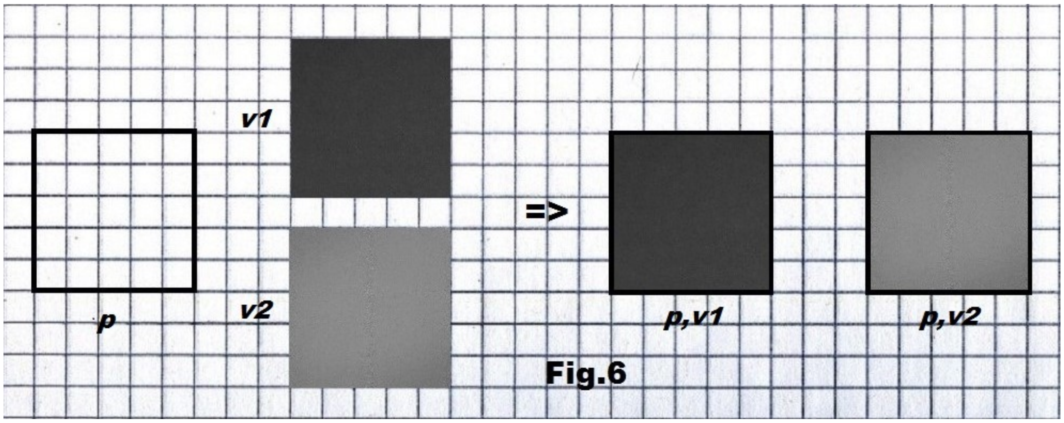


Fig.5 Generation of two states based on structures with one position p and two values v1 and v2

On the other hand, three bases U, A and T (black, gray and white) can define DNA through pairs A and T (gray-white), and define RNA through U and A (black-gray). While the difference between RNA and DNA sequences cannot be seen in the binary case, this is not the same in the trinary constellation.

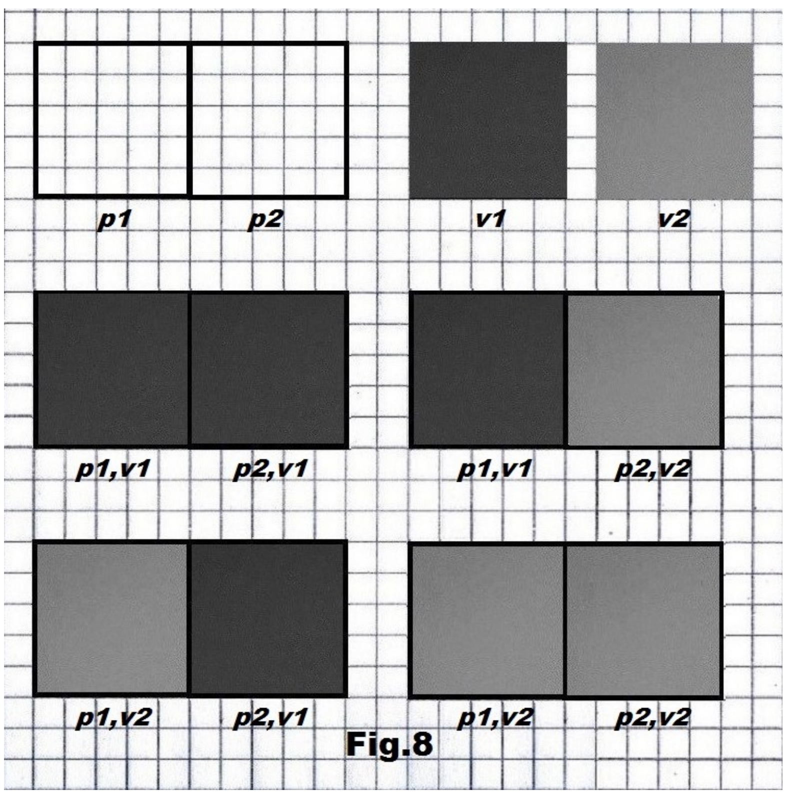


Fig.8 Generation of different states based on structures with two positions(p1,p2) and two values(v1,v2)

Similar binary and trinary sequences of different chemical structure could be the basic structures of some non-RNA / DNA life forms and also be presented visually in the form of images of a discrete structure. For both such cases, a sufficient matrix would be 2x2 and two values(dark, light) for the binary, and (white, gray) and (gray, black) for the trinary. In other words, the simplest possible image consists of only two positions (two pixels) and two values that they can contain (dark-light).

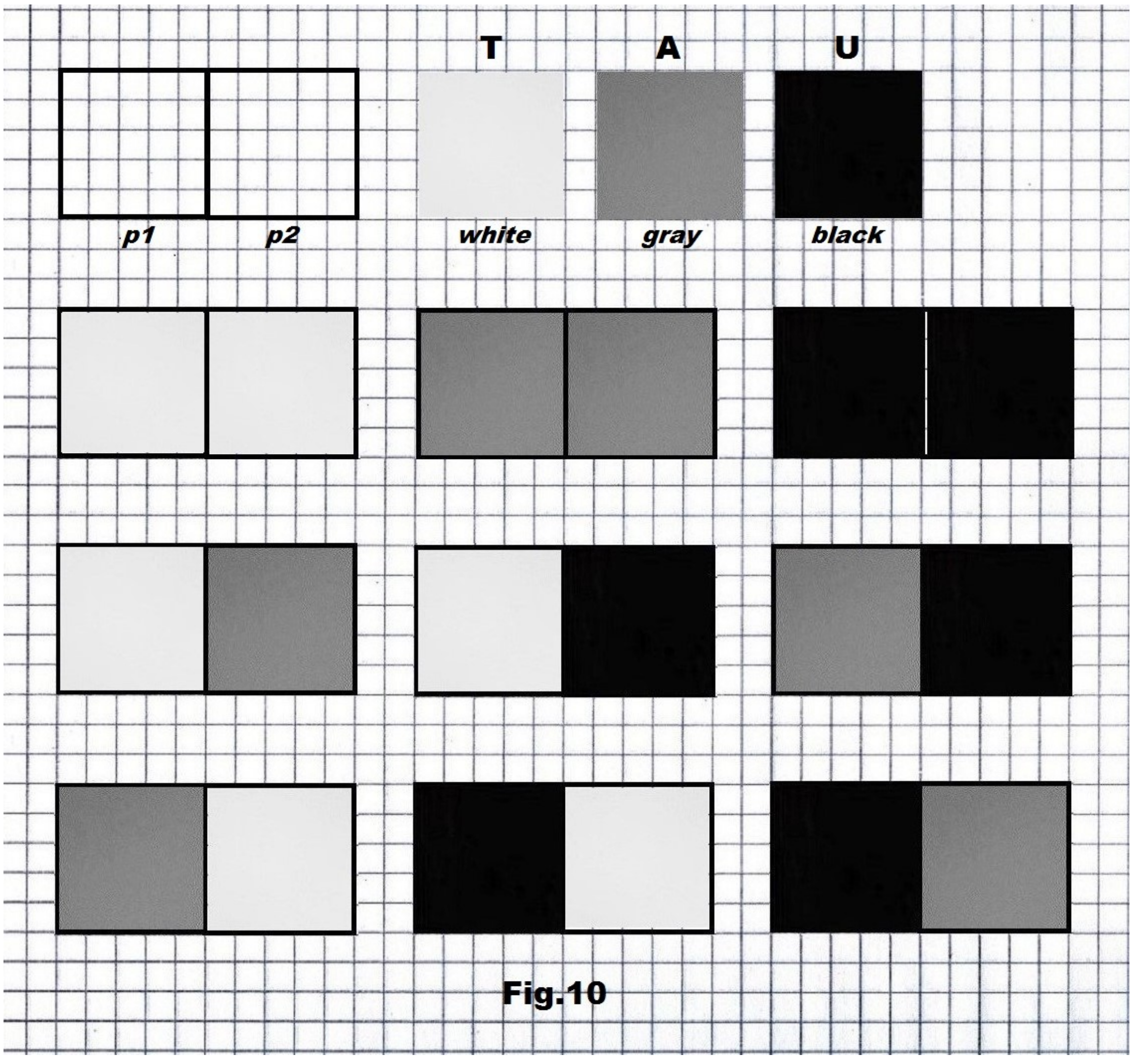


Fig.10 Generation of different states based on structures with two positions(p1, p2) and three values T,A,U(white, gray, black)

However, in order to be able to distinguish the properties of its surroundings, this "knowledge" had to be at some point distinguished for the first time, and then encoded/impressed into these molecules as an integral part of their structure, as

some kind of “memory”. Those earliest living molecules, proto-observers, which by some chain of events acquired this capacity to sense/recognize “hot” and “cold” and preserve it, had a much better chance of survival. Thus, the very basic properties of our environment that we could distinguish today as hot-cold, dark-light, order-disorder, were most likely first acquired by the earliest living molecules (proto-RNA?), then encoded and memorized within their molecular structure and then transmitted to all living matter including us.

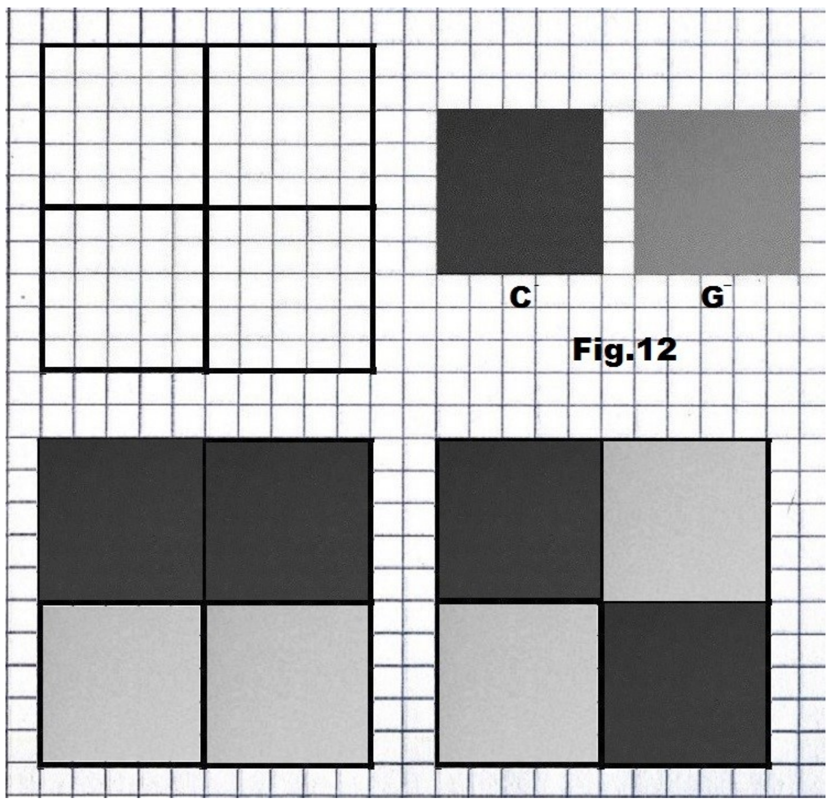


Fig.12 Generation of different states based on 2x2 structures with for positions and two values C,G(dark, light)

These “first images” are in fact the most rudimentary “pictures of the world” impressed (recorded) by early life forms, and it is not possible to experience them. However, the capacity to distinguish hot (bright) or cold (dark) is characteristic of all life forms today and it is still necessary for their survival. Thus, it is most likely that this earliest “picture of the world” was binary: hot-cold (white-black).”

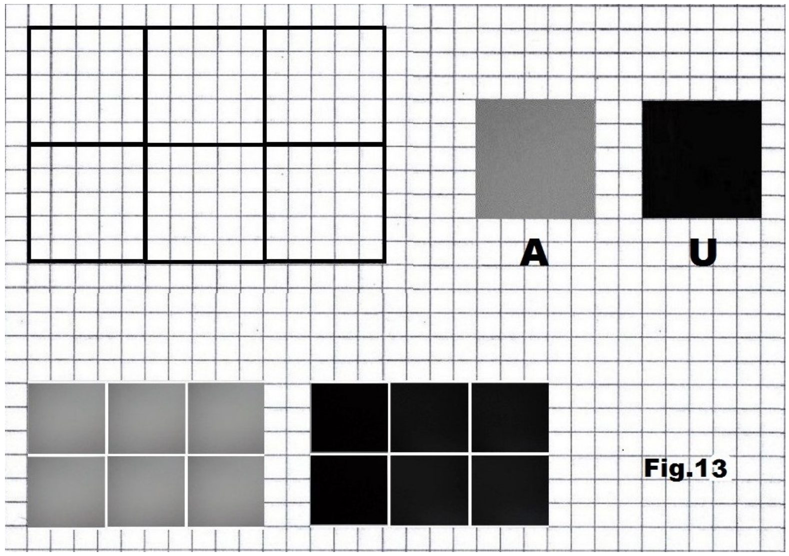


Fig.13 Generation of different states based on 2x3 structures with six positions and two values A,U(gray, black)

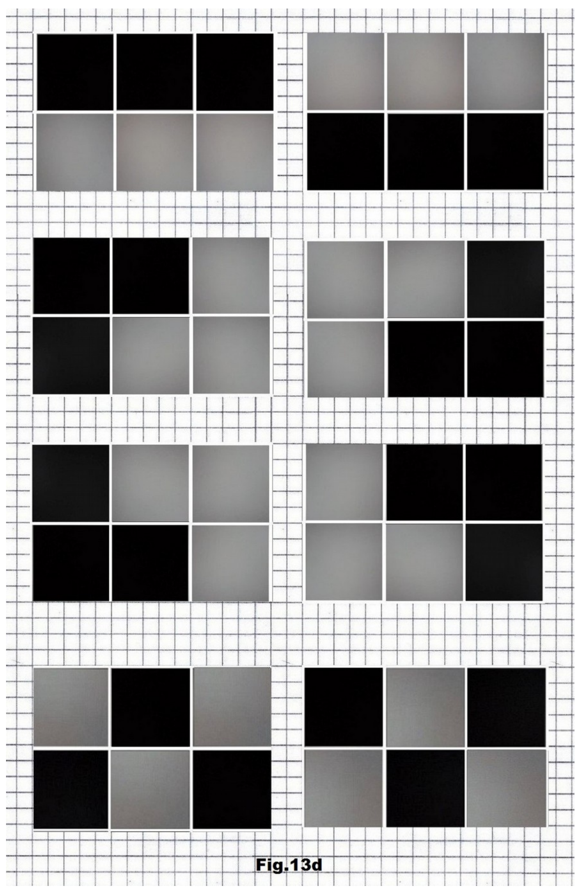


Fig.13.a Generation of different states based on 2x3 structures with six positions and two values A,U(gray, black).

In the Fig.13a above the first six binary states are with the high organization while the last two are with highest entropy.

These would be the most elementary images of the world perceived and recorded by any matter that can be called living, whether it is based on RNA / DNA or some other molecular structure, whether on Earth or some extraterrestrial object. If it is complicated to recognize or even imagine the very physiology and metabolism of an extraterrestrial life and its origin, it might be possible in this way to at least try to imagine and even perhaps "reconstruct" how such organism might "perceive the world" around it.

Fig.14 Alien from The Giant Leeches 1959 film

Most of the images in this article came from the earlier post “Between Light and Darkness” on this blog. However, while they were then used to show possible rudimentary images of the world as perceived by the earliest life on Earth, here their meaning is extended to extraterrestrial, including non-RNA/DNA based, life forms.

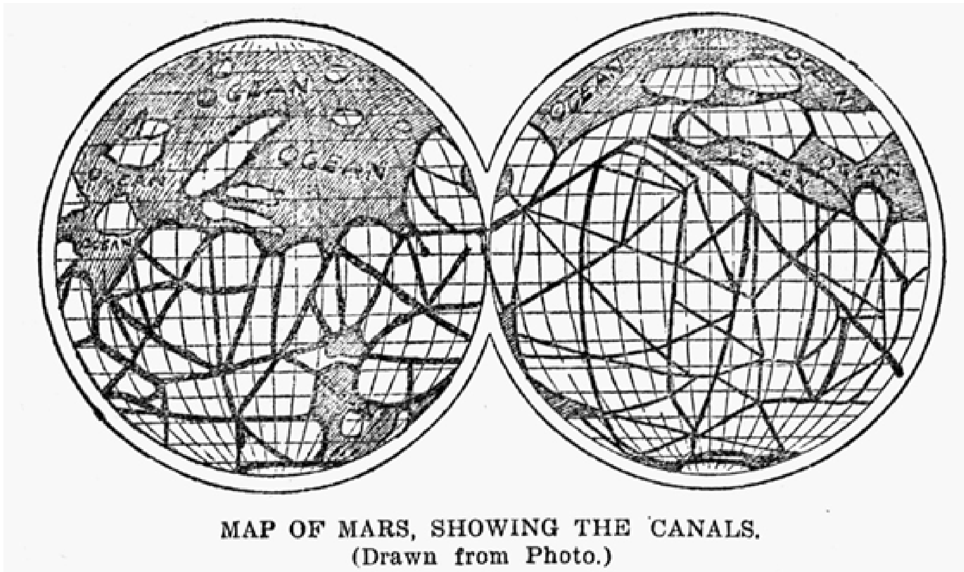


Fig.15 Map of the Mars canals, The Review, 1898

If the first life form was carrying pictures of the world impressed on it, this early life itself was a picture of its environment. This seems to be characteristic of all life forms on Earth that came after. In a way we are all pictures of our environment, of its properties within which we could survive. If some intelligent alien life had me in its laboratory, it will be able to reconstruct the environmental conditions and parameters within which my metabolism remains normal and keeps me alive.

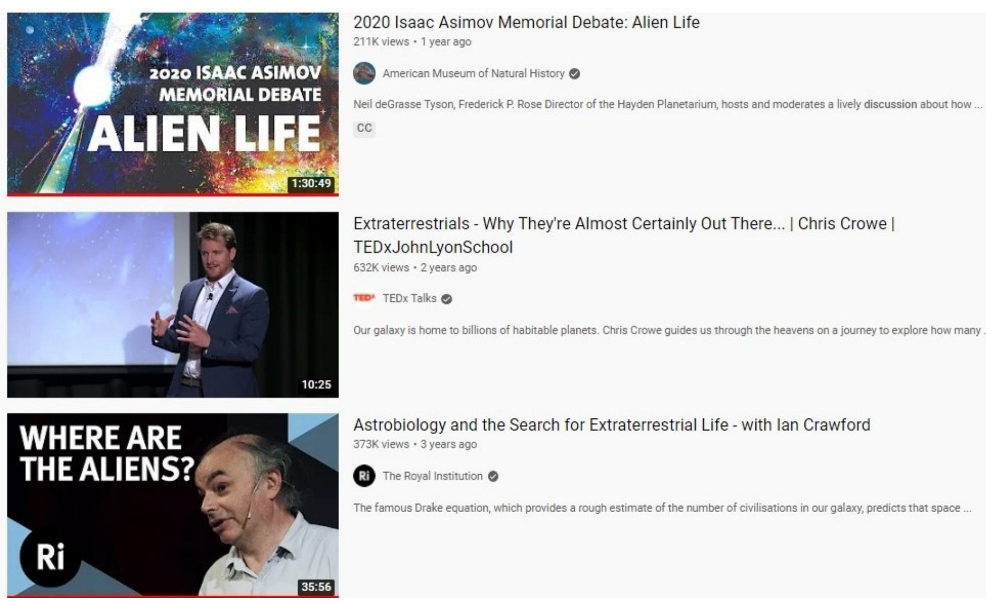


Fig.16 Lectures on alien life on Youtube 2022

But if this is true, then how could we explain all the diversities of life forms that appeared on Earth? How did the Cambrian explosion come about after three billion years of single cell organism domination? (Fig.17) These were diverse multicellular life forms emerging and surviving practically within the same environment. And they all represented very different pictures of this same world. Although all these life forms became part of the environment for each other as well, this doesn't explain such diversity within an environment with the same living conditions. So many different pictures of the same world impressed on life forms based on the same RNA/DNA foundation.

Fig.17 Cambrian explosion

The same could be noticed , let's say, on a farm today with all the chickens, sheep, cows, horses, pigs, hedgehogs, rats, sparrows, grasshoppers and humans cutting the grass or sitting under a tree waiting for an apple to fall. All these varieties of life exist and manage to survive within the same micro-ecosystem and shape it as well. But each of them represents/embodies a different picture of the same environment. How to explain this considering the degree to which all our DNA based genotypes are so similar? It seems that in the early stages of life there was no distinction between the genotype and the phenotype, they were both the same.

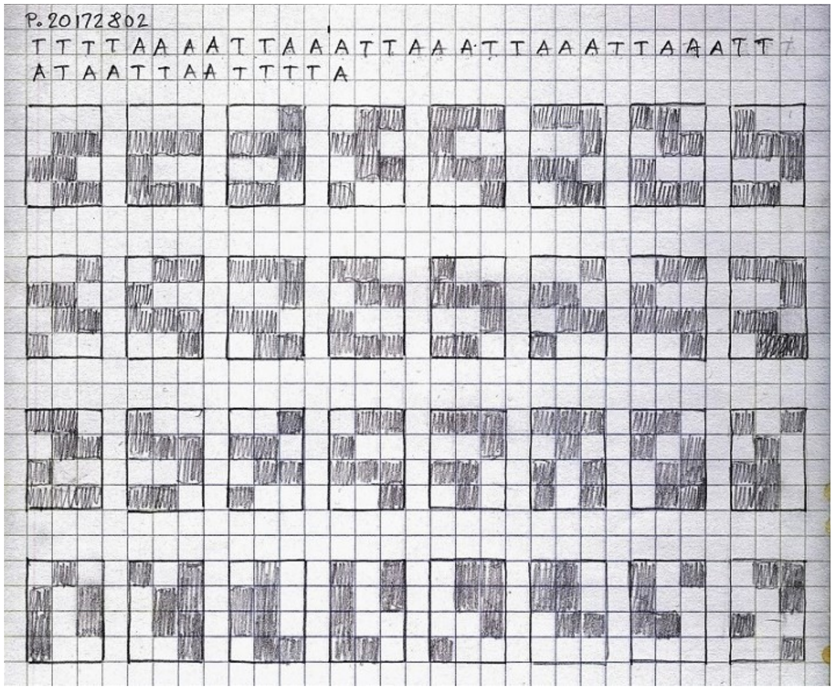


Fig.19 Series of images of the Human Chromosome Chr22 43 position sequence beginning with p.20172802

This way visually represented DNA sequence as small images is generated by the conversion of a series of nods placed on a wet biological thread (Fig.19) on which the "pictures of the world" were imprinted; first into a geometric line with a series of points marked with letters A, C, G and T and then by gray scale and 3x4 matrix, converted into a small picture on the screen (or paper) in front of us. (Fig.18)

Fig.19 DNA knot as seen under the electron microscope

These images are then translated by the two our retinas into impulses that are transmitted by nerve pathways to the center of vision in the brain, where again some moist reticular threads (Fig.20) translate these impulses into a visual representation / images that we see in our head.(Fig.21)

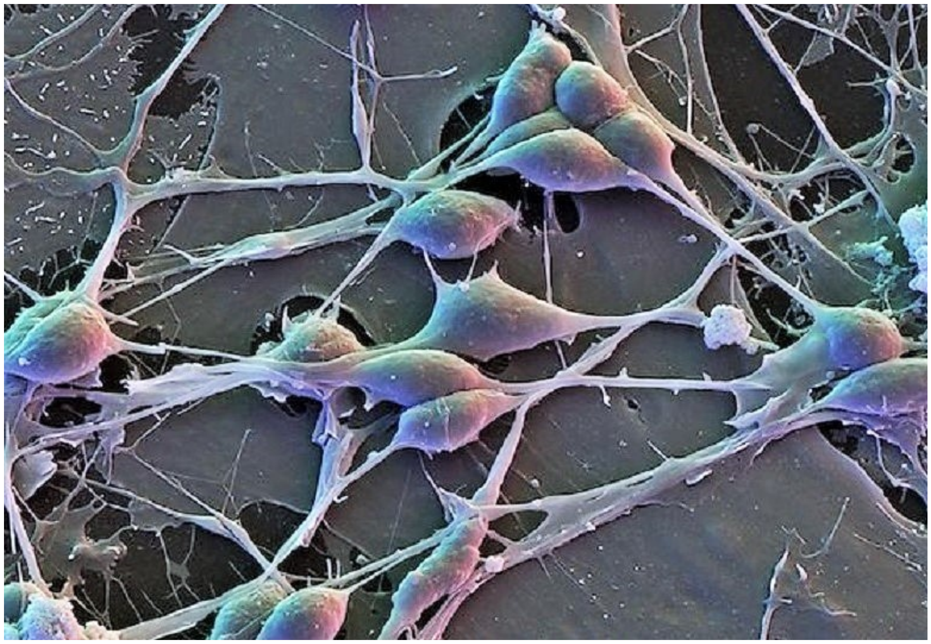


Fig.20 Human Cortical Neurons under the microscope

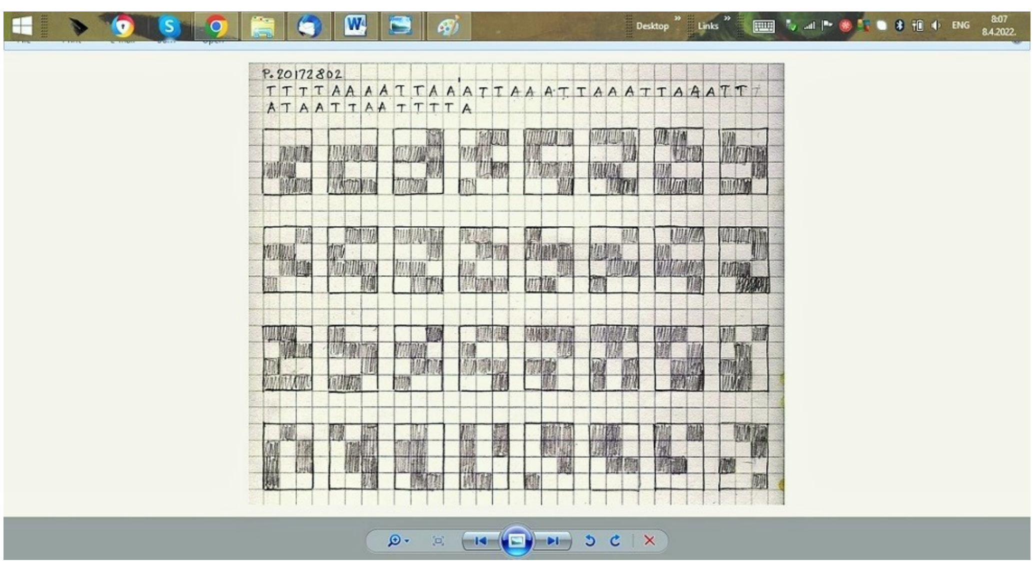


Fig.21 Series of images of the Human Chromosome Chr22 43 position sequence beginning with p.20172802 on the computer screen

Thus, a kind of rudimentary "pictures of the world", imprinted in the wet organic DNA thread, becomes visible to us through other living organic threads that are in our center of vision. At the same time we will never be able to see any such picture under the microscope while directly examining the DNA or the nerve cells. All this adds another wrinkle to the unfolding story about the relationships between living and nonliving matter, or between bio and artificial “intelligence”.

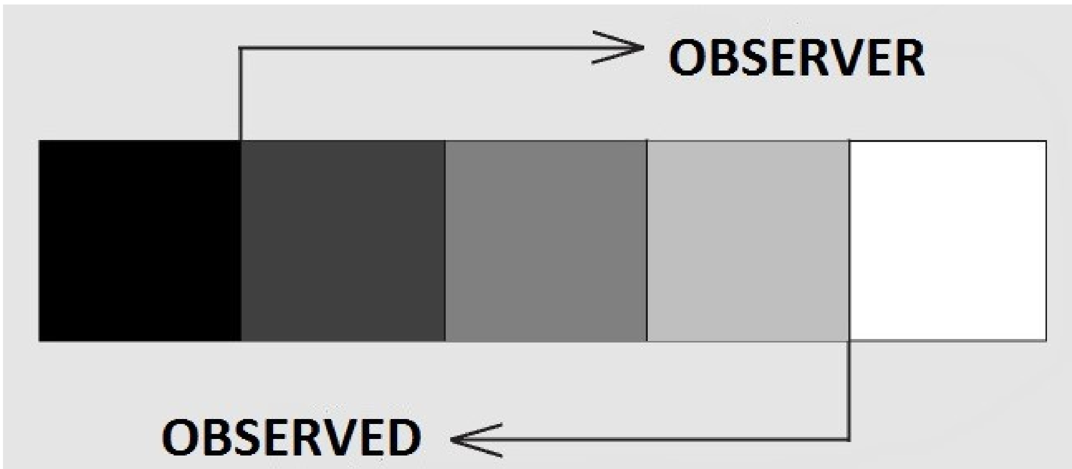


Fig.22 Observer-observed relationship as five interconnected stages

It might be that the process we call Evolution, which led to more complex life forms on Earth, was not to improve their chances for survival, but to acquire a better picture of the world, moving from lower (two pixels) toward higher resolution images. Thus, improving chances of survival was not the main goal, but only a necessary means for life's need to see itself and the world around it in the best possible way.

One more thing: recently I became puzzled why human beings are so eager to find out if there is life beyond Earth? There is even a name for it: Astrobiology, and enormous scientific, technological and financial resources have been engaged in related projects especially in recent decades beginning with SETI. Curiosity to find out if there is life on some other planet or moon within the Solar system is understandable since at some point in the not so distant future it can be researched and examined directly by traveling to these places. But putting so much effort into looking for extra-solar planets even ten-twenty light years away and trying to catch possible glimpses of possible life there, doesn’t make much sense.

It is hard to imagine that humans will be able to travel such distances soon, if ever, while just observing through telescopes, even sending a probe, will never give us reliable information.

Fig.23 Earth seen from the Moon, picture by the Apollo 8 crew, 1968

The entire endeavor doesn't look reasonable on a human scale and it cannot be explained rationally. One possible, although far-fetched, explanation could be that certain networks of humans are in some way "nudged" to do all this almost as a "tissue" of the (possible) self-conscious Biosphere. Tied to a rock while traveling alone through space, such a Biosphere would naturally be anxious to find out if there is someone else in the Universe except her. Sounds like SF but may not be impossible.

Gregor Mobius April 7, 2022